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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/596,863 06/19/00 NOVAK

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MMC2/1010

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EXAMINER

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AUSTIN TX 78767-0398

BETTENDORF, J

ART UNIT	PAPER NUMBER
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2817

DATE MAILED:

10/10/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/596,863

Applicant(s)
NOVAK

Examiner
Justin P. Bettendorf

Art Unit
2817



- The MAILING DATE of this communication appears on the cover sheet with the correspondence address -

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Jun 19, 2000 is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 2 & 3 20) ☐ Other:

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DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "72" has been used to designate both left and right electrodes in figure 11. Correction is required.

The applicant is required to provide a copy of the drawings with proposed drawing changes marked in red ink as required by 37 CFR 1.121(d).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harada et al. U.S. Patent No. 6,198,362 in view of Roy et al. "ESR and ESL of Ceramic Capacitor Applied to Decoupling Applications" (cited by the applicant as B19) and Novak "Reducing Simultaneous Switching Noise and EMI on Ground/Power Planes by Dissipative Edge Termination" (cited by the applicant as B15).

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The Harada et al. reference discloses a PCB with capacitors connected between the ground layer and power layer which discloses that the characteristic impedance determines the resonance frequency {i.e. the resonance frequency inherently depends on $1/(2\pi\sqrt{LC})$ } which is dependent upon the size and structure of the parallel plates which has an outer dimension of 100 X 160 mm. The reference discloses that parasitic inductance should be reduced and is reduced by having a certain number "n" decoupling capacitors (col. 7, lines 32-68). However, the reference does not disclose the particular values of the mounted resistance and mounted inductance.

The Roy et al. reference discloses methods of determining and reducing the mounted inductance of a decoupling capacitor which includes all of the associated inductances mounted on a PCB and the mounted resistance of a decoupling capacitor (pages 214-215).

Furthermore, it would have been well-known to terminate the edges of the PBC planes by the characteristic impedance being equal to the total resistance and that the total inductive reactance should be less than the total resistance as taught by the Novak reference.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the invention to have selected the "n" decoupling capacitors in the device Harada et al. having a mounted resistance equal to n times the characteristic impedance because such an arrangement would have achieved a termination resistance equal to the parallel combination of each of the mounted capacitor resistance (i.e. $R_{total} = 1/(1/R_{cap} + 1/R_{cap} + \dots + 1/R_{cap})$ for n identical capacitors which can only equal R_{total} if $R_{cap} = nR_{total}$ and R_{total} is set to equal the characteristic impedance as taught by Novak). Also, the total mounted inductance must be kept

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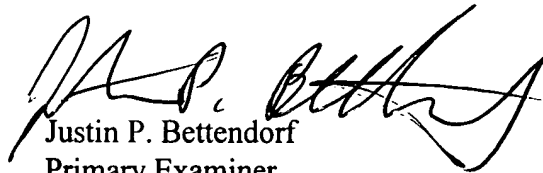
less than the total resistance which adds in parallel for the same reasons as noted above for the resistance of the mounted capacitance (e.g. 1/5th the total inductance of the planes would have been a mere optimization). The Roy et al. reference teaches how to determine the mounted inductance and mounted resistance.

With reference to the method claims, the Harada et al. reference implies calculating the perimeter (i.e. col. 7, line 44) and separating the capacitors to be less than $\frac{1}{2}$ wavelength (col. 8, lines 56-68) taken in conjunction with decreasing L by having n decoupling capacitors (see col. 7, lines 58-68). The calculation of the perimeter would have been necessary in order to determine the number of capacitors to be placed at the interval.

Additionally, as noted above, the Harada et al. reference teaches placing the elements at least $\frac{1}{2}$ wavelength apart. Nevertheless, with respect to claim 27, it would have been a mere optimization to place the capacitors at 1/10 of a wavelength apart.

Also, the determination of the perimeter as $2(x + y)$ is obvious for a rectangle because that is the accepted formula for the perimeter.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin Bettendorf whose telephone number is (703) 308-2780 and FAX number is (703) 308-7722.


Justin P. Bettendorf
Primary Examiner
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jpb
October 1, 2001